

SEQUENCE LISTING

<110> Kimoto, Norihiro
Yamamoto, Hiroaki
Mitsubishi, Kazuya

<120> Carbonyl Reductase, Method for Producing Same, DNA
Encoding Same, and Method for Producing Alcohols
Using Same

<130> D1-008DP1-US

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<150> JP 1998-363130

<151> 1998-12-21

<150> JP 1999-171160

<151> 1999-06-17

<160> 29

<170> PatentIn Ver. 2.0

<210> 1

<211> 879

<212> DNA

<213> Kluyveromyces aestuarii

<400> 1

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 <213> Kluyveromyces aestuarii

<400> 2

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Pro Gln Glu Pro Pro Lys Glu Gln Tyr Pro Asp Gly Val Asn Tyr Leu
 20 25 30

Ser Leu Phe Ser Gln Lys Gly Lys Leu Thr Val Ile Thr Gly Gly Ala
 35 40 45

Gly Ala Ile Gly Gly Ala Leu Cys Glu Gly Phe Ala Ser Cys Gly Ser
 50 55 60

Asp Val Val Ile Leu Asp Tyr Lys Tyr Ser Pro Glu Leu Ser Ser Val
 65 70 75 80

Leu Glu Ser Arg Tyr Gly Val Arg Ser Lys Ser Tyr Gln Val Asp Ile
 85 90 95

Thr Ser Ser Glu Asp Val Lys Leu Val Val Ala Lys Ile Leu Glu Asp
 100 105 110

Phe Pro Asp Arg Asp Ile Asn Thr Phe Val Ala Asn Ala Gly Ile Ala
 115 120 125

Trp Thr Asn Gly Ser Ile Leu Asn Glu Asn Ala Thr Pro Asp Val Trp
 130 135 140

Lys Arg Val Met Asp Val Asn Val Gln Gly Thr Tyr His Cys Ala Lys
 145 150 155 160

Tyr Val Ala Glu Val Phe Lys Gln Gln Gly His Gly Asn Leu Ile Leu
 165 170 175

Thr Ala Ser Met Ser Ser Tyr Ile Ser Asn Val Pro Asn Tyr Gln Thr
 180 185 190

Cys Tyr Asn Ala Ser Lys Ala Ala Val Arg His Met Ala Lys Gly Phe
 195 200 205

Ala Val Glu Phe Ala His Leu Thr Asn Pro Ala Gly Lys Ile Arg Cys
 210 215 220

Asn Ser Val Ser Pro Gly Tyr Thr Asp Thr Ala Leu Ser Ala Phe Val

225 230 235 240
 Pro Val Glu Gln Arg Ala Gln Trp Trp Gly Leu Thr Pro Met Gly Arg
 245 250 255
 Glu Ala Leu Pro Gln Glu Leu Val Gly Ala Tyr Leu Tyr Leu Ala Ser
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 Tyr Thr Cys Val
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<210> 3
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 <212> PRT
 <213> *Kluyveromyces aestuarii*

<400> 3
 Thr Phe Gln His Phe Leu Arg Gly Gly Leu
 1 5 10

<210> 4
 <211> 10
 <212> PRT
 <213> *Kluyveromyces aestuarii*

<400> 4
 Tyr Ser Pro Glu Leu Ser Ser Val Leu Glu
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<210> 5
 <211> 10
 <212> PRT
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence:Artificially
 Synthesized Primer Sequence

<400> 5
 Gly Phe Ala Val Glu Phe Ala His Leu Thr
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<210> 6
 <211> 35
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 <213> Artificial Sequence
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 <223> Description of Artificial Sequence:Artificially
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<400> 6
 gacggatcca cwttycarca yttyytragr ggwgg 35

<210> 7
 <211> 35
 <212> DNA
 <213> Artificial Sequence
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 Synthesized Primer Sequence

<400> 7
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<210> 8
 <211> 38
 <212> DNA
 <213> Artificial Sequence
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 <223> Description of Artificial Sequence:Artificially
 Synthesized Primer Sequence

<400> 8
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<210> 9
 <211> 38
 <212> DNA
 <213> Artificial Sequence
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 <223> Description of Artificial Sequence:Artificially
 Synthesized Primer Sequence

<400> 9
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<210> 10

<211> 32
 <212> DNA
 <213> Artificial Sequence
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 Synthesized Primer Sequence

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<210> 11
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 Synthesized Primer Sequence

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<210> 12
 <211> 254
 <212> DNA
 <213> Kluyveromyces aestuarii

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 aaattgacag ttatcactgg tggagcagga gccattggcg gagctctgtg tgagggattt 180
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<210> 13
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 <212> DNA
 <213> Kluyveromyces aestuarii

<400> 13
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 gttttggaat ctaggtatgg agtgaggctc aaaagctatc aggtcgacat tacgagttca 300
 gaagacgtga aacttggtgt tgcaagatt ttagaagatt ttctgatcg cgatatcaat 360
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<210> 14

<211> 437

<212> DNA

<213> *Kluyveromyces aestuarii*

<400> 14

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 catggtaatc tgattttgac tgcgtcgatg tcaagttata taagcaacgt tcccaactac 360
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<210> 15

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
 Synthesized Primer Sequence

<400> 15

tcggtggctc ctgaggaac

19

<210> 16

<211> 23

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Artificially
 Synthesized Primer Sequence

<400> 16

acatgttata atgcctctaa agc

23

<210> 17

<211> 1787

<212> DNA

<213> Kluyveromyces aestuarii

<400> 17

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<210> 18

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 18

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36

<210> 19

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 19

tgttctagat taaacgcaag tgtaccacc g

31

<210> 20

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 20

tctgtatcag gctgaaaatc ttc

23

<210> 21

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 21

atatattaat gtatcgatta aataaggag

29

<210> 22

<211> 891

<212> DNA

<213> *Kluyveromyces aestuarii*

<400> 22

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cagaaaggga aattgacagt tatcactggt ggagcaggag ccattggcgg agctctgtgt 180
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aaccgccgag gtaaaatcag atgcaattcg gtttcacctg gttacactga caccgcactt 720
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ttcacaatg gatgtgatat tcaagtagac ggtgggtaca cttgcgttta a 891

<210> 23

<211> 296

<212> PRT

<213> *Kluyveromyces aestuarii*

<400> 23

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Asp Lys Thr Val Pro Gln Glu Pro Pro Lys Glu Gln Tyr Pro Asp Gly
20 25 30

Val Asn Tyr Leu Ser Leu Phe Ser Gln Lys Gly Lys Leu Thr Val Ile
35 40 45

Thr Gly Gly Ala Gly Ala Ile Gly Gly Ala Leu Cys Glu Gly Phe Ala
50 55 60

Ser Cys Gly Ser Asp Val Val Ile Leu Asp Tyr Lys Tyr Ser Pro Glu
65 70 75 80

Leu Ser Ser Val Leu Glu Ser Arg Tyr Gly Val Arg Ser Lys Ser Tyr
85 90 95

Gln Val Asp Ile Thr Ser Ser Glu Asp Val Lys Leu Val Val Ala Lys
100 105 110

Ile Leu Glu Asp Phe Pro Asp Arg Asp Ile Asn Thr Phe Val Ala Asn
115 120 125

Ala Gly Ile Ala Trp Thr Asn Gly Ser Ile Leu Asn Glu Asn Ala Thr
130 135 140

Pro Asp Val Trp Lys Arg Val Met Asp Val Asn Val Gln Gly Thr Tyr
145 150 155 160

His Cys Ala Lys Tyr Val Ala Glu Val Phe Lys Gln Gln Gly His Gly
165 170 175

Asn Leu Ile Leu Thr Ala Ser Met Ser Ser Tyr Ile Ser Asn Val Pro
180 185 190

Asn Tyr Gln Thr Cys Tyr Asn Ala Ser Lys Ala Ala Val Arg His Met
195 200 205

Ala Lys Gly Phe Ala Val Glu Phe Ala His Leu Thr Asn Pro Ala Gly
210 215 220

Lys Ile Arg Cys Asn Ser Val Ser Pro Gly Tyr Thr Asp Thr Ala Leu
225 230 235 240

Ser Ala Phe Val Pro Val Glu Gln Arg Ala Gln Trp Trp Gly Leu Thr
245 250 255

Pro Met Gly Arg Glu Ala Leu Pro Gln Glu Leu Val Gly Ala Tyr Leu
260 265 270

Tyr Leu Ala Ser Asp Ala Ala Ser Phe Thr Asn Gly Cys Asp Ile Gln
275 280 285

Val Asp Gly Gly Tyr Thr Cys Val
290 295

<210> 24

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 24

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31

<210> 25

<211> 31

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Artificially
Synthesized Primer Sequence

<400> 25

ctagtttttag aattcctcta gattactcga g

31

<210> 26

<211> 35

<212> DNA
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence:Artificially
 Synthesized Primer Sequence

<400> 26
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<210> 27
 <211> 30
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence:Artificially
 Synthesized Primer Sequence

<400> 27
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<210> 28
 <211> 786
 <212> DNA
 <213> Bacillus subtilis

<400> 28
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<210> 29
 <211> 261
 <212> PRT
 <213> Bacillus subtilis

<400> 29

Met Tyr Pro Asp Leu Lys Gly Lys Val Val Ala Ile Thr Gly Ala Ala
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Ser Gly Leu Gly Lys Ala Met Ala Ile Arg Phe Gly Lys Glu Gln Ala
 20 25 30

Lys Val Val Ile Asn Tyr Tyr Ser Asn Lys Gln Asp Pro Asn Glu Val
 35 40 45

Lys Glu Glu Val Ile Lys Ala Gly Gly Glu Ala Val Val Val Gln Gly
 50 55 60

Asp Val Thr Lys Glu Glu Asp Val Lys Asn Ile Val Gln Thr Ala Ile
 65 70 75 80

Lys Glu Phe Gly Thr Leu Asp Ile Met Ile Asn Asn Ala Gly Leu Glu
 85 90 95

Asn Pro Val Pro Ser His Glu Met Pro Leu Lys Asp Trp Asp Lys Val
 100 105 110

Ile Gly Thr Asn Leu Thr Gly Ala Phe Leu Gly Ser Arg Glu Ala Ile
 115 120 125

Lys Tyr Phe Val Glu Asn Asp Ile Lys Gly Asn Val Ile Asn Met Ser
 130 135 140

Ser Val His Glu Val Ile Pro Trp Pro Leu Phe Val His Tyr Ala Ala
 145 150 155 160

Ser Lys Gly Gly Ile Lys Leu Met Thr Glu Thr Leu Ala Leu Glu Tyr
 165 170 175

Ala Pro Lys Gly Ile Arg Val Asn Asn Ile Gly Pro Gly Ala Ile Asn
 180 185 190

Thr Pro Ile Asn Ala Glu Lys Phe Ala Asp Pro Lys Gln Lys Ala Asp
 195 200 205

Val Glu Ser Met Ile Pro Met Gly Tyr Ile Gly Glu Pro Glu Glu Ile
 210 215 220

Ala Ala Val Ala Ala Trp Leu Ala Ser Lys Glu Ala Ser Tyr Val Thr
 225 230 235 240

Gly Ile Thr Leu Phe Ala Asp Gly Gly Met Thr Gln Tyr Pro Ser Phe
 245 250 255

Gln Ala Gly Arg Gly
260